Course title	***Database [IT, DP]***
Course code	DatZ3094
Branch of science	Computer Science
Credit points	4
ECTS credit points	6
Total number of auditory hours	**64**
Number of seminars and practical classes	64

Course developer (s)

Vija Vagale lecturer
Vija Jankoviče lecturer

Background knowledge

DatZ1037, Algorithms and Data Structures I [IT, 1th, sem. 2]
DatZ2008, Algorithms and Data Structures II [IT, 2th, sem. 3]
DatZ3005, Database I [IT,2th, sem. 3]
DatZ1049, Programming Fundamentals (C + +) ([IT, 1th, sem. 1]
DatZ1057, Programming Fundamentals (C + +) II [IT, 1th, sem. 2]
InfT2010, Project management [IT, 2th, sem. 3]
DatZ1063, Home page creation [IT, 1th, sem. 1]

Course summary

The course is intended for professional higher education bachelor degree study program „Information Technology" (42481) students.
The course is given:
-relational database theoretical foundations: the relationship table, keys, constraints, table normalization, relational operations
-data database management system MS SQL Server 2012 architecture and objects
-introduction SQL - receiving data and manipulation: operators select, insert, update, delete
-database programming language (Transact SQL), storage procedures and functions
-work with databases in MS Visual Studio.
DBII
The course provides thorough knowledge of web-based relational database creation and administration. Focuses on database design and programming data base management process.

Learning outcomes

Students will learn the basic theoretical knowledge, awareness of the opportunities for storage, the database management system.
Course the students learned and were able to demonstrate:
knowledge and understanding of:
• organize your data in a relational database;
• database design, normal forms;
skills:
• create tables in the database;
• fill tables;
• edit data tables;
• sort and group data in a table;
• select data from one table;
• select data from multiple tables.

DBII

Course the students learned and were able to demonstrate:
knowledge and understanding of:

- database design and normal forms;
- organize your data in a relational database;
- database migration;
- the concepts of views, procedures, functions, triggers and transactions;
- database users and their rights;
- Web database operations.

skills:

- how to create database schema, a backup copy;
- to a selection of cells by using complex criteria;
- how to create simple storage procedures, functions, and triggers.

Course plan

Course structure: practical work – 64 hours

Semester 3. -(DatZ3005-I)
Course structure: practical work – 32 hours

Seminars / practical work / laboratory work themes:

1. Introduction to databases. Database management systems.
2. MS SQL Server 2012 Management Studio check, architecture and objects.
3. Data types. Operations.
4. Defining the table and filling.
5. Keys: potential alternatives, primary, and external. Database diagram creation.
6. Operator select. Simple relational operations. Sources of data (from, view, select). Selection rules Where and Having.
7. Data sorting and grouping functions.
8. Null practical application.
9. Null role connections and assembly functions.
10. Comparison operators.
11. Connections. Cartesian, internal, external, and overall connectivity.
12. Recursive queries. Subqueries.
13. Analytical functions.
14. Introduction to built-in functions.
15. Data selection.
16. Create a table from existing and new tables together.

Semester 4. -(DatZ3040-II)
Course structure: practical work – 32 hours

Seminars / practical work / laboratory work themes:

1. Create a copy of the database. Database migration.
2. Create a database schema.
3. Database data modelling. ER diagrams. Database functional modelling.
4. Relational database design. Functional dependencies, normal forms, normalization.
5. Create a query by getting data from multiple tables.
6. To create queries using the sorting, grouping, limits the formulas.

7. View creation.
8. Procedure creation.
9. Function creation.
10. Trigger the use of the database administration.
11. Task scheduling database (events).
12. Transactions.
13. Database users, their rights.
14. Data blocking.
15. Database drivers InnoDB MyISAM.
16. Database access using the Web interface.

Requirements for acquiring credit points

Semester 3. -(DatZ3005-I)
Differentiated test.

Visit the class required 10% of the total mark. The individual tasks at work and get work – 90% of the total mark.

Semester 4. -(DatZ3040-II)
Examination.
Visit the class of at least 75% of the number of sessions.
The mention of course is made taking into account the visits and quiz and practical task tags:
1. Lesson visit represents 10% of the total mark.
2. Tests and practical task represents 90% of the total mark.
Tests:
the design of the database;
data selection;
procedures and functions.
The practical task:
create and assign a relational data

Contents of the course

Semester 3. -(DatZ3005-I) - 2 CP

Databases theoretical foundations.
Database management system for MS SQL Server 2012 Management Studio.
The design of the database.
Create a database. Manipulate data in the database.

Semester 4. -(DatZ3040-II) - 2 CP
Data models.
The design of the database. An existing database service. The concepts of relational databases: queries, views, procedures, functions, triggers, transactions and data locking. Using the database web application. Database users and their rights.

Course textbooks

1.http://datubazes.wordpress.com/2007/12/03/datubaze/ Datu bāzu resurss latviski
2.Введение в системы баз данных. К.Дж. Дейт, 6-изд., Киев-Москва 1998. 784 с.
3.Дэвидсон Л. Проектирование баз данных на SQL Server 2000. М.: Бином, 2003. – 680 с.
4. Алан Бьюли . Изучаем SQL, 2007. 4.A. Silberschatz, H. F. Korth, S. Sudarshan. Database system concepts. Sixth Edition, McGraw-Hill, 2011. http://www.db-book.com/

5.SQL. Энциклопедия пользователя. Ханс Ладани, Киев-1998. 624 с. 5.Хомоненко А.Д., Цыганков В.М., Мальцев М.Г. Базы данных: Учебник для высших учебных заведений. 2004. – 736 с.

Additional literature

1.http://lv.wikipedia.org/wiki/Kategorija:Datu_b%C4%81zes Wikipedia. Datu bāzes
2.Томас Коннолли, Каролин Бегг, Анна Страчан. Базы данных. Проектирование, нормализация и сопровождение. Теория и практика. 2-изд. Москва, Издательский дом “Вильямс”, 2000. 1120 с.
3.Малыхина М. П. Базы данных. Основы, пректирование, использование. Serija: Учебное пособие. БХВ-Петербург, 2004. – 512 с.
4.SQL Server 2008: ускоренный курс для профессионалов. Роберт Э. Уолтерс, Майкл Коулс, Роберт Рей, Фабио Феррачати, Дональд Фармер
5.Роб П., Коронел К. Системы баз данных. Проектирование, реализация и управление. БХВ-Петербург , 2004. – 1040 с.
6.Oracle Database 11g. Руководство администратора баз данных. Издательство: Вильямс, 2010.

Periodicals and other sources of information

1.http://msdn.microsoft.com/ru-ru/library/ms187940.aspx Microsoft MSDN
2. http://databases.about.com/od/sqlserver/a/Introduction-To-Sql-Server-2012.htm

Notes / Remarks

A professional higher education bachelor degree study program "Information technology “(42481) Part B – field professional specialisation course